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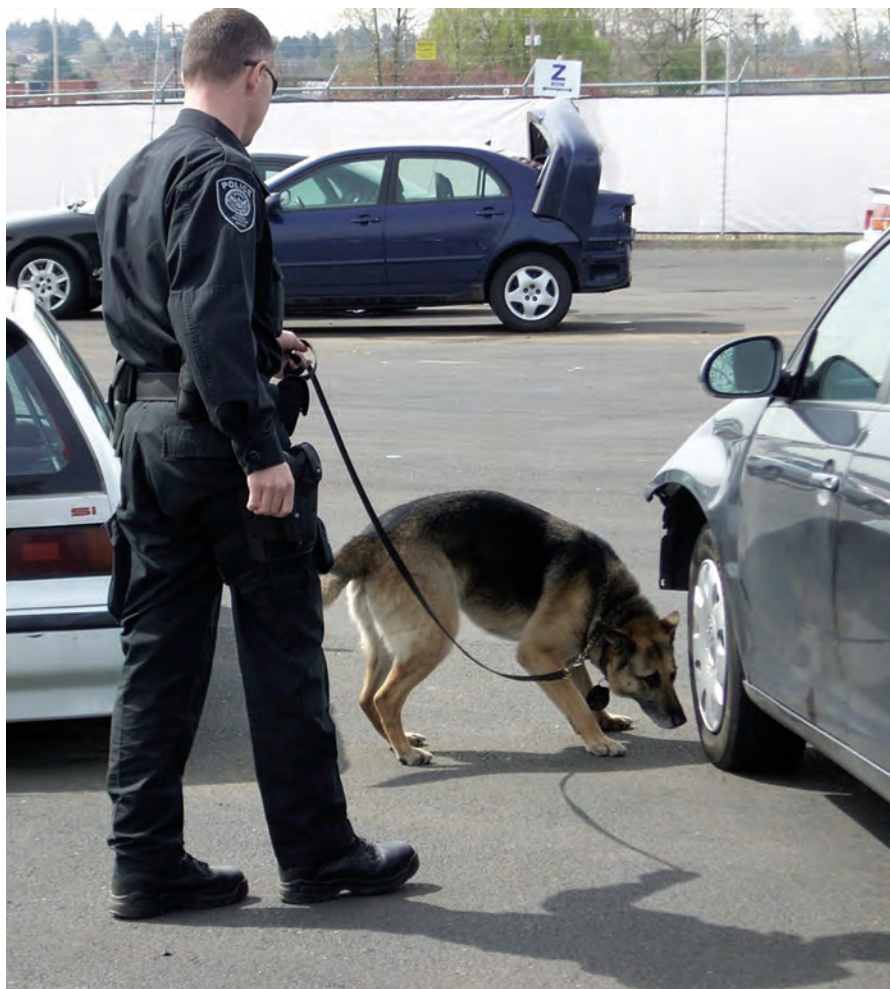


# APPLYING SCIENCE TO THE ART OF DETECTION CANINES

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These authors, who have degrees ranging from HAZMAT to chemistry to chemical engineering, have contributed to numerous canine R&D programs at Battelle Memorial Institute in Columbus, OH, providing scientifically defensible study design and procedures, unbiased evaluations, and rigorously tested products for our nation's working dogs.

## INTRODUCTION



Dogs have played important roles in law enforcement and military applications for centuries. They were used in the American Revolution as sentries, messengers, and trackers. Moving forward 100 years, two bloodhounds were used in 1888 by London Police in an attempt to track Jack the Ripper, one of the first documented uses of dogs in law enforcement. Fast forwarding another 100 years, canine units have been a staple at airports since 1972 when Brandy, a bomb dog from New York, located an explosive device on an aircraft. Today, canines are widely recognized as a critical element in the protection of our nation from crime and terrorism. While a proven commodity, detection canine programs still face challenges, including legal scrutiny, workload/training balance demands, emerging threats, and increasingly intelligent adversaries.

This article is the first in a series devoted to the application of basic scientific practices and understandings to scent detection work. The authors are scientists who have spent nearly 20 years working with canine teams, handlers, trainers, and supervisors.

# 1 TOPIC



Our technical training, combined with our extensive firsthand exposure to detection canine teams, provides a unique perspective to a variety of relevant topics. Future discussions will range from cross-contamination, to use of distracters, to emission rate factors. Each article will be designed around a common theme - establishing training exercises that yield quality, reliable and defensible detection canine teams. When setting up a training exercise, target-related details such as mass and hide location likely receive the bulk of the attention. However, it is critical that all materials and items in the exercise be given proper consideration. This article addresses the importance of key non-target items.

## KEY NON-TARGET ITEMS

“Background” items are the regular, unadulterated objects present in a scenario. For a canine team that works a vehicle checkpoint, background items would be a group of employee or visitor vehicles arranged around the target vehicle. A sufficient

number of background items creates the illusion of an operational search and allows for meaningful time and distance characteristics. It is unrealistic, and even damaging, for a training exercise to have too few of background items. These authors prefer scenarios that have at least ten background items for any one target.

“Controls” are clean versions of any material(s) your canine may inadvertently associate with or as the target. For example, if a target is hidden with a barrier material, that barrier is potentially part of the dog’s ‘picture’ of the target, and a clean sample of that barrier is an appropriate control. Fresh samples of the gloves used in handling targets are another example of a smart control. These and any other materials potentially associated with the target must be placed throughout each training exercise; by requiring the canine to encounter and leave the odor of a control (with a verbal ‘good boy’ as appropriate), you will ensure it understands that those items are not the objective, effectively keeping him focused and honed on the true target.

Finally, “distracters” are non-target materials included in training exercises to ensure that canines are not simply responding to unique or novel odors. Distracters can be almost anything – from air fresheners to toothpaste to duct tape to personal effects. Distracters should be hidden just as the targets are and should be constantly varied. Distracters are best if procured shortly before training (e.g., grab miscellaneous items from the office or home that morning). This practice avoids the hassles of long-term storage and the potential for contamination if your training supplies are stored or transported (i.e., in the trunk) together.

Appropriate use of non-target items, as described above, will help your training scenarios better reflect real world searches, minimize inappropriate cues/bias that are difficult to avoid (especially when dealing with a highly sensitive detector that has an ability to learn), and challenge your canine to advance its detection capabilities. ■

Look for Topic 2 in the next issue, January/February 2014.